6th Edition
AAPG Siliciclastic Reservoirs of the Middle East GTW
1-3 December 2025 | Kuwait City, Kuwait

New Evidence for Oman's Western Deformation Front from the Block 60 Area: Implications for the Miqrat Depositional Trends at the Fahud Basin Margin

Sharif Al Bahri[1,2], Mohammed Razi[1], Faris al Zadjali[1], Abdulrahman Al Hooti[1], Ghalia Al Alawi[1], Iranta Bona[1], and Shotaro Asami[1]

[1]OQ Exploration & Production Company
[2]The University of Leeds

Abstract

The Miqrat formation (Haima Supergroup, Late Cambrian-Silurian), a vital siliciclastic hydrocarbon reservoir, occurs within the main syn- to post-rift fill of Oman's major Salt Basins (Fahud, Ghaba, and South Oman). This system as a whole is bounded to the west by the Western Deformation Front (WDF), a structurally complex N-S trending presumed continental suture.

We present new tectonostratigraphic evidence from Block 60 in central Oman, utilizing petrophysical logs and seismic data, that refines the location and character of this critical boundary and may validate interpretations which predict its extension across the Depositional evidence from Well 1 drilled to the west of the main field's boundary fault shows a profound loss of reservoir quality and a complete absence of proximal alluvial fan facies (conglomerates/sheet flood sands) west of the field boundary, confirming depositional limits were controlled by the WDF.

Crucially, structural evidence from crestal Well 2 indicates that this field boundary fault is a reverse fault associated with a compressional popup structure, directly linking the fault kinematics to the regional WDF trend. These findings confirm the WDF's continuity from the South Oman Salt Basin to the Fahud Basin and improve Miqrat exploration models in basin margin settings by establishing that coarse alluvial fan deposition were not strictly basin-confined, with marginal areas dominated by thin marginal sands and volcaniclastics.